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EXAMINER

MARIAM, DANIEL G

ART UNIT PAPER NUMBER

2621

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/705,297

Applicant(s)

SILVER ET AL.

Examiner

DANIEL G. MARIAM

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 122-151 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 122-151 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/10/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. In page 2 of the amendment to the specification, under the heading "Cross Reference to Related Applications" states: "U.S. Patent Application Serial Number 09/979,588" as one of a continuation application number. This application number is incorrect, and appropriate correction is required.

### ***Original Claims***

2. While applicants have canceled claims 1-120 of the originally filed claims by the amendment (See page 3 of the amendment), and have submitted newly added claims 121-150 (See pages 3-6 of the amendment), the originally filed claims in fact contain claims 1-121. Applicant should cancel originally filed claims 1-121.

### ***Claim Objections***

3. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 121-150 have been renumbered 122-151.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 122 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

While claim 122 recite the limitation “a single-frequency edge detector for detecting edges in the sub-sampled image to provide edges, . . .” in lines 7-8, the specification says nothing about this limitation.

Since claims 123-147 directly or indirectly depend on claim 122, they are also rejected under 35 U.S.C. 112, first paragraph, for the same reason set forth above for claim 122.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 150 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 150, line 9 recites the limitation “provide a column, a row, . . .” What does this mean? Does this mean providing a column and row of gradient magnitude and direction? Please clarify.

Since claim 151 depends on claim 150, it is also rejected under 35 U.S.C. 112, second paragraph, for the same reason set forth above for claim 150.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 148 and 149 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkinson (5,280,351) in view of Borer (6,345,106).

With regard to claim 148, Wilkinson detects features, such as edges, in an input video image (See for example, Figs. 2 and 4), comprising: a tunable boundary detector for detecting features in a source image, the boundary detector comprising: a tunable low-pass filter for filtering the source image to provide a filtered image (See for example, col. 3, lines 60-65), a gradient estimator adapted to provide an estimate of horizontal and vertical components of image gradient at each pixel position (See for example, Figure 2); (a Cartesian-to-polar converter) adapted to convert each estimate of horizontal and vertical components of image gradient into an estimate of gradient magnitude and gradient direction, a peak detector adapted to use each estimate of gradient magnitude and gradient direction to provide a column, a row, a gradient magnitude and a gradient direction (See for example, col. 8, lines 41-44; and col. 12, lines 40-63); and a sub-pixel interpolator adapted to use each column, row, gradient magnitude and gradient direction to provide a vertical component of edge position, a horizontal component of edge position, a gradient magnitude, and a gradient direction (col. 4, lines 7-20; col. 5, line 66 – col. 6, line 4; col. 6, lines 44-54).

While Wilkinson converts each estimate of horizontal and vertical components of image gradient into an estimate of gradient magnitude and gradient direction, i.e., gradient vector (See Fig. 2), Wilkinson does not expressly call for a Cartesian/rectangular to Polar converter.

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Converting a Cartesian to polar is extremely well known as evidenced by Borer (See item 32, in Fig. 6). Therefore, it would have been obvious to one having ordinary skill in the art to incorporate the teaching as taught by Borer into the system of Wilkinson and to do so would at least aid in determining the gradients accurately.

Please note, since the structure of Wilkinson is capable of performing the intended use, i.e., defined by the intended use/optional language of “adapted to”, then it meets the claimed invention. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). Applicants may rewrite the claim by replacing the intended use language “adapted to” with “arranged to or configured to”.

With regard to claim 149, the tunable boundary detector of claim 148, further comprising: an adjustable image sub-sampler, cooperative with the low-pass filter, for sub-sampling the filtered image to provide a sub-sampled image (See for example, col. 5, lines 4-17; and Figure 4 of Wilkinson).

10. Claims 150 and 151 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (5,694,487) in view of Wilkinson (5,280,351).

With regard to claim 150, Lee determines feature points based on pixel intensity gradients and detect edges based on the gradients (See for example, col. 2, line 56 – col. 3, line 18), comprising: providing an estimate of horizontal and vertical components of image gradient at each pixel position, i.e., pixel location (See for example, col. 3, lines 45-67), converting each estimate of horizontal and vertical components of image gradient into an estimate of gradient

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magnitude and gradient direction, using each estimate of gradient magnitude and gradient direction to provide a column, a row, a gradient magnitude and a gradient direction (See for example, col. 4, lines 1-8); and using each column, row, gradient magnitude, and gradient direction to provide a vertical component of edge position, a horizontal component of edge position, a gradient magnitude, and a gradient direction (See for example, col. 4, lines 9-58). Lee does not expressly call for filtering the source image to provide a filtered image. However, Wilkinson (See for example, item 11, in Fig. 2) teaches this feature. Therefore, it would have been obvious to one having ordinary skill in the art to employ the teaching as taught by Wilkinson's system into Lee's system if for no other reason than to provide a filter, and to do so would at least remove noise from the image.

With regard to claim 151, the method of claim 150, further comprising: after filtering, sub-sampling the filtered image to provide a sub-sampled Image (See for example, col. 5, lines 4-17; and Figure 4 of Wilkinson).

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5072384 and 5398292.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL G. MARIAM whose telephone number is 571-272-7394. The examiner can normally be reached on M-F (7:00-4:30) FIRST FRIDAY OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BHAVESH M. MEHTA can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**DANIEL MIRIAM**  
**PRIMARY EXAMINER**

June 2, 2005